

A conjecture about an under-Current at the Streights-Mouth, read before the Oxford Society, Dec. 21. 1583. by the reverend and learned Tho. Smith D. D. Fellow of Mag.Col. Oxon. and of the R. Society.

IN the Offing between the North Foreland and South Foreland it runs *Tide and half Tide*, that is it is either ebbing water or flood upon the shore, in that part of the Downs, three hours, which is grossly speaking the time of half a tide, before it is fo, off at sea. (For the flux and reflux of the sea is not made exactly twice in 24 hours, but, as it appears by accurate observation, it requires an overplus of almost 50 minutes.) The reason of this diversity of tides, I take to be from the meeting of the two seas in that narrow strait.

Often times when the wind has blown hard at N.E. or at W. or W. and by S. there has hapn'd an alteration of the tides in the river of Thames, which ignorant people have mistakingly lookt upon as a prodigy.

It is a most certain Observation, that where it flows tide and half tide, tho the tide of flood runs aloft, yet the tide of ebb runs under foot, that is, close by the ground; and so at the tide of ebb, it will flow under foot, as that great and experienc'd Sea-Commander, ^a Sr. Henry Mainwaring words it. Upon this supposition I shall humbly offer a conjecture to this learned Society concerning the mediterranean Sea, after I have premised this brief history of it, as containing certain matter of fact.

There is a vast draught of water poured continually out of the Atlantick into the Mediteranean, the mouth or entrance of which between Cape Spartel or Sprat, as the sea-men call it, and Cape Trafalgar, may be near 7 leagues wide, the current setting strong into it, and not loosing its force till it runs as far as Malaga, which is about 20 leagues within the Streights. By the benefit of this Current, tho the wind be contrary, if it does not over-blow, Ships easily turn into the gulf, as they term the narrow passage, which is about 20 miles in length. At the end of which are two Towns, Gibraltar on the

(a) Seamen's dictionary p. 106.

coast

coast of *Spain*, which gives denomination to the *Streight*, and *Cuta* on the *Barbary* coast: at which places *Hercules* is supposed to have set up his *pillars*. What becomes of this great quantity of water poured in this way, and of that, which runs from the *Fuxim* into the *Bosporus* and *Propontis*, and is carried at last through the *Hellepont* into the *Agæan* or *Archipelago*, is a curious *speculation*, and has exercised the wit and understanding of *Philosophers* and *Navigators*. For there is no sensible rising of the water all along the *Barbary Coast*, even down to *Alexandria*, the land beyond *Tripoli*, and that of *Egypt*, lying very low, and easily overflowable. They observe indeed, that the water rises 3 feet, or 3 feet and an half, in the *gulf* of *Venice*, and as much, or very near as much, all along the *Riviera* of *Genova*, as far as the river *Arno*: but this rather adds to the wonder.

I here omit to speak at large of the several *hypotheses*, which have been invented to solve this difficulty: such as *subterraneous vents*, cavities and indraughts, *exhalations* by the *Sun beam*: the running out of the water on the *African side*, as if there were a kind of circular motion of the water, and that it only flowed in upon the *Christian shore*: which latter I look upon as a meer *fansy*, and contrary to all observation.

My conjecture is, that there is an *under-current*, whereby as great a quantity of water is carried out, as comes flowing in. To confirm which, besides what I have said above about the difference of tides in the *offing*, and at the *Shore* in the *Downs*, which necessarily supposes an *under Current*, I shall present you with an instance of the like nature in the *Baltick Sound*, as I received it from an able seaman, who was at the making of the tryal.

He told me, that being there in one of the *King's Fregats*, they went with their *Pinnace* into the *middle stream*, and were carried violently by the *Current*: that soon after they sank a bucket with a large *Cannon* bullet to a certain depth of water, which gave check to the boats motion, and sinking it still lower and lower, the boat was driven a head-ward against the *upper Current*: the *current* aloft, as he added, not being above 4 or 5 *fathoms* deep, and that the lower the bucket was let fall, they found the *under-Current* the stronger. I
designed

designed to have made the *Experiment* in the *Streights-Channel* ; but both times I past, the Easterly wind blew so hard, that there was no putting out the boat with any safety ; nor indeed at those times had we any leisure for such a *Curiosity* ; which those, who lived at *Tanger*, might have tryed without any difficulty or danger.

This conjecture, how likely or unlikely soever, will stand or fall according to the certainty of the *Observations*, which shall be made there, which I will endeavour to procure in order to the further establishment, or utter overthrow of it.